

## **Amendments to the Claims**

The Listing of Claims presented below will replace all prior versions, and listings, of claims in the application.

### **Listing of Claims**

1-52. (Canceled)

53. (Currently amended) An array comprising:  
an optical fiber; ~~and~~  
a library of ~~chemical compounds~~ proteins or peptides attached to the optical fiber in a linear arrangement, the library being combinatorial in that its members ~~can be~~ are generated via chemical reactions in which a first set of moieties is attached to a second set of intermediates so that a larger number of products is produced than different chemical reactions are performed; and  
a geometric substrate about which the optical fiber is wrapped in a spiral and in a single layer of fiber about the substrate.

54. (Currently amended) An array comprising:  
an optical fiber;  
a collection of ~~chemical compounds~~ proteins or peptides linearly arranged along the optical fiber; and  
a geometric substrate about which the optical fiber is wrapped in a spiral and in a single layer of fiber about the substrate.

55. (Currently amended) An ~~The~~ array comprising:  
an optical fiber;

a collection of proteins or peptides linearly arranged along the optical fiber, of claim 55,  
wherein each of the ~~chemical compounds~~ proteins or peptides is covalently attached to the  
optical fiber; and

a geometric substrate about which the optical fiber is wrapped in a spiral and in a single  
layer of fiber about the substrate.

56. (Canceled)

57. (Currently amended) An array comprising:

an optical fiber; and

~~a library of chemical compounds~~ proteins or peptides covalently attached to the optical  
fiber in a linear arrangement, wherein members of the library are related to one another by  
synthetic history, such that each member of a first subset of ~~compounds~~ proteins or peptides  
within the library shares a first common feature resulting from a first common chemical reaction,  
and each member of the first subset of ~~compounds~~ proteins or peptides is separated from each  
next closest member by a first distance; and

a geometric substrate about which the optical fiber is wrapped in a spiral and in a single  
layer of fiber about the substrate.

58. (Currently amended) The array of claim 58 57, wherein each member of a second subset  
of ~~compounds~~ peptides or proteins within the library shares a second common feature resulting  
from a second common chemical reaction, and each member of the second subset of ~~compounds~~  
proteins or peptides is separated from each next closest member by a second distance, the second  
distance being different from the first distance.

59. (Currently amended) The array of claim 58 57, wherein the array comprises at least  
three subsets of ~~compounds~~ proteins or peptides, wherein each member of a subset of  
~~compounds~~ proteins or peptides within the library shares a common feature resulting from a  
common chemical reaction, and each member of the subset of ~~compounds~~ proteins or peptides is

separated from each next closest member by a distance, the distance being a characteristic of the subset.

60. (Canceled)

61. (Canceled)

62. (Canceled)

63. (Currently amended) The array of claim ~~55~~ 54 or ~~56~~ 55, wherein the collection of ~~chemical compounds~~ proteins or peptides comprises a library that is combinatorial in that its members ~~can be~~ are generated via chemical reactions in which a first set of moieties is attached to a second set of intermediates so that a larger number of products is produced than different chemical reactions are performed.

64. (Currently amended) The array of claim ~~58~~ 57, wherein the library of ~~chemical compounds~~ proteins or peptides is combinatorial in that its members ~~can be~~ are generated via chemical reactions in which a first set of moieties is attached to a second set of intermediates so that a larger number of products is produced than different chemical reactions are performed.

65. (Canceled)

66. (Canceled)

67. (Currently amended) The array of claim ~~54, 55, or 58~~ 53, 54, or 57, wherein the optical fiber is divided into reactant regions.

68. (Currently amended) The array of claim ~~54, 55, or 58~~ 53, 54, or 57, wherein the optical fiber comprises a cladding.

69. (Currently amended) The array of claim 69 68, wherein the cladding is a sol-gel matrix.

70. (Currently amended) The array of claim 69 68, wherein the cladding is a polymer.

71. (Currently amended) The array of claim ~~54, 55, or 58~~ 53, 54, or 57, wherein the optical fiber is derivatized.

72. (Currently amended) The array of claim ~~72~~ 71, wherein the optical fiber is aminopropylsilylated.

73. (Currently amended) The array of claim ~~72~~ 71, wherein the optical fiber is silylated.

74. (Currently amended) The array of claim ~~54, 55, or 58~~ 53, 54, or 57, wherein the optical fiber is coated with at least one layer of cladding.

75. (New) An array comprising:

an optical fiber;

a collection of proteins or peptides linearly arranged along the optical fiber, wherein each of the proteins or peptides is covalently attached to the optical fiber; and

a geometric substrate about which the optical fiber is wrapped in a spiral and in a single layer of fiber about the substrate.

76. (New) An array comprising:

an optical fiber; and

a library of peptides or proteins covalently attached to the optical fiber in a linear arrangement, such that each member of a first subset of peptides or proteins within the library has the same amino acid residue at a particular position of its primary sequence, and each

member of the first subset of peptides or proteins is separated from each next closest member by a first distance.

77. (New) An array comprising:  
an optical fiber;  
a collection of proteins or peptides linearly arranged along the optical fiber; and  
a geometric substrate about which the optical fiber is wrapped in a spiral and in a single layer about the substrate, whereby the protein or peptides are exposed.

78. (New) An array comprising:  
an optical fiber; and  
a library of proteins or peptides covalently attached to the optical fiber in a linear arrangement, the library being combinatorial in that its members are generated via chemical reactions in which a higher degree of complexity of the library is achieved upon each subsequent chemical reaction performed on the library, wherein library members sharing a common characteristic due to exposure to common reaction conditions are separated from one another by a fixed distance along the optical fiber.

79. (New) An array comprising:  
an optical fiber; and  
a library of peptides or proteins covalently attached to the optical fiber in a linear arrangement, such that each member of a first subset of peptides or proteins within the library has the same amino acid residue at a first particular position of its primary sequence, and each member of the first subset of peptides or proteins is separated from each next closest member by a first distance; and  
such that each member of a second subset of peptides or proteins within the library has the same amino acid residue at a second particular position of its primary sequence, and each member of the second subset of peptides or proteins is separated from each next closest member by a second distance.

80. (New) The array of claim 53, 54, or 57, wherein the optical fiber comprises a core surrounded by a cladding;

wherein the cladding is divided into reactant and non-reactant regions;

wherein the refractive index of the core is greater than the refractive index of the non-reactant regions of the cladding, and the refractive index of the non-reactant regions of the cladding is greater than the refractive index of the reactant regions of the cladding.

81. (New) The array of claim 68, wherein the optical fiber further comprises a second layer of cladding.

82. (New) The array of claim 68, wherein the optical fiber comprises a core surrounded by a cladding;

wherein the cladding is divided into reactant and non-reactant regions; and

wherein a grating is present at the interface between the core and the cladding of reactant regions.